European Centre for Disease Prevention and Control

Zika virus disease

Stockholm, 24 March 2016
Background information

Zika virus is a member of the Flaviviridae family and transmitted by mosquitoes

First isolations

• 1947 Rhesus monkey, Zika forest, Uganda
• 1948 *Aedes africanus* – mosquito, Zika forest, Uganda
• 1952 Human, Nigeria

Two Zika virus lineages

• African lineage
• Asian lineage: recently emerged in the Pacific and the Americas
Transmission

Vector borne transmission by *Aedes* mosquitoes

- Sylvatic vector in Africa: *Aedes spp.*
- Primary vector in urban settings: *Aedes aegypti*
- Competent vector: *Aedes albopictus*

Other routes of transmission

- Trans-placental transmission
- Sexual transmission through semen
- Transmission via blood transfusion
Clinical presentation

Incubation period
• Onset of symptoms is 3 to 12 days after infection

Viraemic period
• Short viraemic period allowing for direct virus detection 3 to 5 days after onset of symptoms

Symptoms
• Rash with/without fever and with the following signs and/or symptoms:
  – arthralgia/arthritis
  – conjunctivitis (non-purulent/hyperaemia)
  – general fatigue

Most of the infections remain asymptomatic (approx. 80%)
Potential complications

Microcephaly in foetuses and newborns

- Zika virus has been associated with severe congenital central nervous system malformations and microcephaly
- Zika virus can be spread from a pregnant woman to her foetus. Pregnant women are under follow-up in several affected countries to establish the risk of infecting the foetus

Guillain-Barré syndrome

- Temporal association between Zika outbreaks and increases in the incidence of Guillain-Barré syndrome observed in French Polynesia, Brazil, Venezuela, El Salvador and Colombia.
- Strong evidence is emerging in the scientific literature about the association of Zika with microcephaly and GBS.
Diagnostics

Detection of viral RNA

• RT-PCR during the viraemic period between day 3 and 5 after onset of symptoms (serum and saliva)
• Detection in urine up to 10 days after onset.
• Specific investigation: amniotic and cerebrospinal fluids and tissues (e.g. placenta).

Serology: Zika-specific IgM antibodies

• IgM antibodies against Zika virus detectable from day 5 after onset of symptoms.
• Detection of Zika-specific IgM antibodies requires confirmation by plaque-reduction neutralisation tests because of cross-reactivity with antibodies against other flaviviruses.
• Vaccination status and infections with other flaviviruses must be considered when interpreting the results.
Treatment and vaccine

Symptomatic treatment

• Often mild disease which requires no specific treatment
• Supportive nursing care and relief of symptoms are the standard treatment

There is no vaccine or specific antiviral treatment.

• However, vaccine development is underway in several countries.
Prevention – Mosquito reduction

Integrated vector management

• Intersectoral collaboration and efficient public communication strategies to ensure community participation are required for sustainable vector control

Reduction of mosquito breeding sites:

• removal of all open containers with stagnant water in and surrounding houses on a regular basis or, if that is not possible, treatment with larvicides
• tight coverage of water containers, barrels, wells and water storage tanks
• wide use of window/door screens by the population

During an outbreak, limitation of adult mosquitoes through aerial spraying with insecticides can be considered
Protection against mosquito bites

• *Aedes* mosquitoes bite during the daytime both indoors and outdoors. Personal protection measures should therefore be applied during the day

**Personal protection measures:**

• using appropriate mosquito repellents and wearing long-sleeved shirts and long trousers

• sleeping or resting in screened or air-conditioned rooms, otherwise use insecticidal treated mosquito nets, even during the day

• repellent use must be strictly done in accordance with the instructions indicated on the product label.
Timeline: Global

Timeline: The Americas

Current outbreak

Reported confirmed autochthonous cases of Zika virus infection

In the past 2 months

In the past 9 months


Data as of 24 March 2016
Event background

**Brazil**
- Autochthonous transmission of Zika confirmed.
  - 14 May 2015

**Brazil**
- Reports of unusual increase of microcephaly cases.
  - 22 Oct 2015

**Brazil**
- Brazilian ministry of health declares public health emergency
  - 11 Nov 2015

**French Polynesia**
- Reports of increase in congenital malformations in foetuses during 2013—14 outbreak
  - 24 Nov 2015

**PAHO/WHO**
- Acknowledges spread of Zika in several South/Central American and Caribbean countries
  - 17 Jan 2016

**WHO**
- Declares international public health emergency
  - 1 Feb 2016
Aedes mosquitoes in Europe

Distribution of the *Aedes mosquito* as of January 2016

**Aedes aegypti**

- Established
- Introduced
- Absent
- No data/unknown

**Aedes albopictus**

- Established
- Introduced
- Absent
- No data/unknown

Preparedness in the EU/EEA

Preparedness regarding Zika in the EU includes:

• strengthening surveillance systems to ensure early detection and rapid notification of cases

• reviewing contingency plans for mosquito-borne outbreaks to ensure rapid vector control measures around imported cases in areas with competent vectors

• strengthening intersectoral collaboration and promoting community involvement for the control of the *Aedes* mosquito vectors of Zika virus

• strengthening integrated mosquito surveillance, including invasive species
Response by ECDC

Ongoing activities

• Active monitoring of the outbreak
• Epidemiological updates including reporting countries with local transmission
• Risk assessments
• Case definition for reporting at the EU level
• Interim technical guidance
• Close follow-up of new knowledge about of the disease
• Collaboration with WHO and CDC
• Expert consultation on Zika virus infection and review of surveillance and control measures, April 20-21 2016
Response by ECDC

Supporting documents

- **Rapid risk assessments:**

- **Epidemiological updates:**

- **Factsheets for health professionals**